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REDUCING BLOOD SAMPLING FOR CIRCULATING BLOOD VOLUME DETERMINATION: A PILOT FEASIBILITY ANALYSIS

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Learning Objectives: Circulating blood volume (BV) analysis is a validated means (BVA-100, Daxor Corporation, NY) of assessing intravascular volume in critically-ill patients. After obtaining a baseline sample of 5-ml of blood with a simultaneous laboratory Hematocrit (Hct) measurement, a known amount of I-131-radiolabeled-albumin is injected intravenously over 1-minute and allowed to mix completely during a 12-minute interval. Serial blood samples are then obtained at 12, 18, 24, 30 and 36-minutes to correct for albumin transudation with extrapolation of data points to time zero to obtain Plasma Volume (PV). The simultaneous Hct value allows for calculation of Red Blood Cell Volume (RBCV), where total circulating BV = RBCV + PV. This information may be beneficial in guiding fluid management in complex critically-ill patients. Although the information is valuable, current technology is cumbersome due to the need for multiple blood draws. This study compared BV measurements obtained based on 1 blood draw (1BD) vs 5 blood draws (5BD) after administration of the radiolabeled-isotope.

Methods: This is a retrospective study of critically-ill surgical subjects who had BV analysis done between 2010 and 2014. BV calculated based on 5BD was compared to the BV calculated with 1BD.

Results: 101 subjects comprised the study cohort. Demographics included: age 66 ± 16 years (mean±SD), 61% male, mean APACHE score 24 ± 5 (mean±SD), 72% survival rate. The mean bias between 1BD and 5BD was 0.71 with limits of agreement -3.7 to 5.1 (mean bias±2SD). While the means bias represented a statistically significant difference from zero ($p \le 0.01$), 97% of the subjects were within the limits of agreement and there was no systematic bias observed. Only 3 of the 101 subjects (3%) were misclassified with respect to BV status based on 1BD which was not statistically significant (Bowker's test of symmetry, p=0.95).

Conclusions: Clinically similar BV values may be obtained using 1BD compared to 5BD. If these findings are validated in a larger study, reducing blood sampling in BV analysis will result in more rapid reporting of test results with a corresponding reduction in the quantity of blood sampled, technician time and costs. This may further serve to increase the availability of this technology to more ICUs.

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INTERNATIONAL SURVEY OF PRACTICES DURING TARGETED TEMPERATURE MANAGEMENT FOLLOWING CARDIAC ARREST

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Learning Objectives: Current guidelines on post-cardiac arrest care, management of pain, agitation, and neuromuscular blockade (NMB) do not align with protocols used in randomized trials that evaluated the safety and efficacy of targeted temperature management (TTM). Due to conflicting findings in the literature, the variants of clinical practice are unknown. The purpose of this study was to describe the prevalence of protocolized care, preferred temperature target, medication administration practices, and details of monitoring and titration goals.

Methods: A 41-question survey was developed using an online data program, validated through three rounds of peer review by an interdisciplinary panel, and distributed via six listservs and social media platforms. All responses were eligible for inclusion. Respondents that failed to submit the survey or were not physicians, advanced practice providers, or pharmacists were excluded. Descriptive statistics were used for analysis.

Results: 109 responses were analyzed, comprised of 73% pharmacists and 36% practicing in the southeastern United States. Institutions of all sizes were represented. Care during TTM was protocolized in 96% of responses. For goal temperature, 33°C and 36°C were 'always' targeted 22.9% and 21.7% of the time, respectively. For therapy prescribed at induction of TTM, analgesia and sedation were frequently initiated simultaneously (55.7%) followed by analgesia monotherapy (24.5%) and sedation monotherapy (14.2%). The majority of respondents used fentanyl (79.2%) for analgesia and propofol (60%) for sedation. Cisatracurium was the preferred paralytic at 41% of responses, but there was no majority. Continuous infusion was the preferred dosing method for analgesia (87.7%), sedation (94.3%), and NMB (64.8%). Significant variability was found in the monitoring and titration parameters for analgesics, sedatives, and paralytics.

Conclusions: Protocolized care is common despite lack of evidence-based recommendations. There was consistency in practice related to analgesics and sedatives. Areas of greatest variability include prescribing patterns of paralytics and titration goals for analgesia, sedation, and paralysis.

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